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LABOR COST OF PRODUCING CORN IN OHIO

A study conducted jointly by the Office of Farm Management, Bureau of Plant Industry, United States Department of Agriculture, and the Department of Cooperation, Ohio Agricultural Experiment Station

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During the decade 1900-1909, the average annual production of corn in Ohio was 111,333,105 bushels, grown on 3,034,607 acres.* On account of the importance of this crop and the extent to which it is grown throughout the state, it is essential that we know what it costs to produce it, and what are the profits resulting from its production. Owing to the many factors and uncertainties in its production, it is quite difficult to arrive at an accurate cost, but on the basis of nearly 200 fields with a total of more than 2,000 acres, representing 23 counties of the state and with the records extending over a period of seven years, fairly accurate conclusions, at least regarding the labor cost, may be drawn.

In determining the cost of production it is essential that all the labor, whether man or animal, and whether performed by the operator and his family or by hired help, be taken into consideration. While this is perhaps the most important factor in the cost of production, yet it is only one of many. The following outline shows the factors that go to make up the total cost of production.

(1) Labor { Man { Hired / Operator and his family
Beast }
(2) Land rental—or the interest and taxes on the amount invested in the land
(3) Machine rental—or the machinery cost of implements used in producing a given commodity—consisting of:
Annual depreciation—determined from the inventories.
Repairs { Labor—obtained from the labor reports. / Cash—obtained from the financial accounts. }
Interest on the average capital invested in the implement.
Taxes and insurance on the implement.

*From the reports of the Ohio State Board of Agriculture.

(4) Supplies—such as seed; twine; fuel for shredding, silo filling, etc.
(5) Cash rental of machines and crew—such as $1.25 per hour for silo filling.
(6) Fertility—a proportion of the value of manure, fertilizer or lime applied.
(7) Interest—on the cost until the enterprise yields a return.
(8) Overhead cash expense—items which cannot be charged to any particular enterprise, but which are prorated among all the enterprises at the end of the year. In many cases a number of small amounts, each of which could be charged directly to some enterprise, have been reported under one head such as, "blacksmithing," "hardware," etc. When they were reported in this manner it was necessary to charge the amount to "General Farm." Other examples of general farm expense are: admission to corn shows and county or state fairs; farm papers; telephone rent; stationery, etc.
(9) Insurance—on growing crops against plant diseases, insects, hailstorms and other weather conditions

The first three items in the foregoing should be found in every crop enterprise, while the fourth and eighth are very common. The item "storage charge" or the rental on the buildings required to store the crop, has not been included in the foregoing outline, for the reason that it is not considered an item in the actual cost of production, but is more properly an item that should be charged against the storage of the crop after it has been harvested, and depends somewhat on the management of the farm and the disposition made of the crop. Since the labor required to produce the crop is of such importance and is so frequently overlooked or underestimated in determining the cost of crop production, an attempt is made in the following pages to discuss some phases of that factor alone.

DEVELOPMENT OF THE INVESTIGATION

The work of collecting the data, on which this bulletin is based, had its conception with the Agricultural Students' Union. Since 1905 the investigation has been prosecuted by the Department of Cooperation of the Ohio Experiment Station, and since 1907 it has been conducted in cooperation with the Office of Farm Management, U. S. Department of Agriculture. In 1905 two cooperators were keeping the labor records on their farms and their first records were of such a nature that it was possible to use them in the preparation of this bulletin. These two men are still keeping records. The number of cooperators keeping similar records has varied from year to year. From the map (Figure 1) on page 87 it will be seen that the various sections of the State have been fairly well represented.

Since July, 1909, the work has been under the supervision of Mr. W. L. Elser. Prior to that date it was in charge of Mr. M. O. Bugby of this Department, to whom the writers wish to acknowledge the great value of the records maintained by him from the beginning of the work in 1905 until he turned it over to others.

Acknowledgements are also due to Messrs. H. M. Dixon and M. R. Cooper, formerly of this Department, and to Messrs. Van Over, Brown and Musser of this Department, for the valuable service they have rendered in connection with this work.

The writers also wish to express their appreciation of the hearty cooperation the many farmers have shown by the excellent condition in which they sent in their records.

FIG. 1.
MAP SHOWING COUNTIES IN WHICH FARMS UNDER CONSIDERATION ARE LOCATED

Daily Time Sheet of ..... Farm.

In cooperation with
O. A. E. S. and U. S. D. A.
In Farm Management Investigations.

Make all records on day work is done.

Day of week ..... **Date** .....

Man Hours	Horse No.	Horse Hours	Field	Kind of Work—*Give kind and size of implement used and area covered or amount of work done. When an operation is finished, so state.*
4.30				
5.00				
5.30				
6.00				
6.30				
7.00				
7.30				
8.00				
8.30				
9.00				
9.30				
10.00				
10.30				
11.00				
11 30				
12.00				
12.30				
1.00				
1.30				
2.00				
2.30				
3.00				
3.30				
4.00				
4.30				
5.00				
5.30				
6.00				
6.30				
7.00				
7.30				
Total Hours				..... Workman.

Wage .....
No. Meals .....

Give below kind, amount and value of seed sown, fertilizer used, manure hauled, material used in any operation (such as building fence, etc.) and crop yields (both grain and roughage). Also give source of material, area or portion of field affected and any notes regarding weather, crops or stock, which may be of interest or value.

.....

.....

Made out by.....

Fig. 2. Form used in collecting the data.

METHOD OF COLLECTING THE DATA

The data have been collected quite largely by correspondence, supplemented by visits for the purpose of taking inventories, measuring fields, etc. Figure 2 shows a time sheet such as is used in obtaining the daily labor reports. These sheets are bound in convenient pads and are furnished each cooperator free of charge. In return he makes out the records for each day in duplicate, sending the original to the Experiment Station at the end of the week and retaining the duplicate for his future reference.

From this figure it is manifest that all the labor performed on the farm during the day is accounted for. This bulletin, therefore, is the first of a series, others of which are now in process of preparation, concerning the various farm crops and enterprises, which were embodied on the farms under consideration. This form of labor record is not recommended as being the only workable method or the form best adapted for use by those wishing to keep their own records. It has, however, proved to be a very satisfactory form for correspondence use from an investigational standpoint, though even here it is not infallible. In many cases, for instance, it has been impossible to obtain the actual number of acres covered in any one operation, such as harrowing or discing. However, this is readily overcome by dividing the total time for all the operations of a similar nature by the acreage of the field. This gives the time per acre for any class of operations, and it is this division which later on gives rise to the fractions of hours other than those ordinarily reported on the daily time sheets. This division also gives rise to combinations of operations which have arbitrarily been termed "Fertilization," "Care of Seed," "Preparation of Seed Bed," "Planting," "Cultivating," "Harvesting," "Miscellaneous Labor," and "General Farm Labor." In referring to these combinations they will hereafter be designated as "Partial Items."

In this publication the term "Fertilization" is used to include all the time of applying manure, mixing and applying fertilizers, and applying lime. Though it is undoubtedly incorrect to charge all of the time of applying manures etc., to the first crop, yet owing to the lack of an authoritative decision in this country regarding the residual effect of manures etc., we have so charged the time for applying in each of the succeeding tables and charts. "Care of Seed" refers to the time required for selecting, storing, testing, shelling, etc., of the seed corn used. The "Preparation of Seed Bed," "Planting," "Cultivating" and "Harvesting," each includes all of the various operations necessary for that particular "Partial Item." "Miscellaneous Labor" includes all labor on corn that does

not regularly fall in any of the foregoing partial items. Inspecting the crop, looking up help for husking, etc., would be examples of what should come in this class. The "General Farm Labor" is labor performed during the year which cannot be charged directly to any particular enterprise at the time the work is done, but must be carried until the end of the year and then prorated or distributed among the various enterprises in proportion to the amount of work done on each. Examples of such labor are: attending public sales, institutes or fairs; farm correspondence and records; mowing weeds along fences and roadsides; cleaning up buildings, etc.

The amount of time devoted to "Fertilization," "Care of Seed," "Miscellaneous and General Farm Labor" varies greatly with individual men and even on different fields operated by the same man. Since this variation is due more largely to individuality than to any other influence these partial items have not been shown in Tables XI, XII and XIV on pages 101, 106, 112, nor in Figures 4, 5, 7, 8, 9, 10 and 11, but the amounts given for the totals include these partial items as well as those shown by those tables and charts.

HOURS VS. DOLLARS AND CENTS

In the tables presented in this Bulletin it will be noted that the cost is referred to more frequently in terms of hours than of dollars and cents, for the reason that the cost of labor varies in different sections and under different conditions. The following, and many similar questions, which form the basis of future study, must be answered before we can attempt to put a valuation on the hours of labor that would be comparable in various sections. What is the value of the board, the laundry work done, or the "horse-keep" furnished the laborer who lives in the home of the operator, or the value of the house and garden, wood, meat, milk, etc., furnished the laborer who boards himself? Does the rate of wage include these? Is the operator's wage the same as that of the hired man? How much does it cost to keep a horse per year, and what is the rate per hour of horse labor? Even with this information it is doubtful if the labor cost, expressed in dollars and cents, has as much significance as when expressed in the terms of man and horse hours. However, in some cases it has been necessary to express the cost of labor in dollars and cents, and in such cases the rates of sixteen cents per hour for man labor and eight cents per hour for horse labor have been assumed. While these rates have been assumed in order to make the records comparable, still they can scarcely be considered as being unjust. Table I, published in the December 1910 Bulletin of the Ohio State Board of Agriculture, shows the average wages paid farm hands in 1,056 or more than three-fourths the townships in Ohio.

TABLE I. Rate of wages paid farm laborers. Gathered and returned by official correspondents of the Ohio Department of Agriculture.

Counties	No. townships reported	What is average wage paid to farm hands			
		By day with board	By day without board	By month with board	By month without board
Adams	11	$1.00	$1.25	$17.55	$22.90
Allen	12	1.23	1.63	21.57	30.25
Ashland	10	1.45	1.71	23 46	30.00
Ashtabula	18	1.34	1.68	22.53	30.43
Athens	8	1.08	1.49	20.29	29.20
Auglaize	12	1.40	1 69	21.89	30.38
Belmont	14	1.12	1.48	20.10	27.60
Brown	10	1.00	1.45	20.64	26.78
Butler	11	1.09	1.53	21.64	30.00
Carroll	10	1.23	1.68	22.73	30.00
Champaign	10	1.28	1.60	22.30	28 33
Clark	5	1.12	1.45	22 20	30.00
Clermont	9	1.08	1.43	19 27	24.88
Clinton	8	1.07	1.53	19.25	25.71
Columbiana	14	1.28	1.73	22 53	36.42
Coshocton	14	1.19	1.65	21.31	30.61
Crawford	16	1.46	1.95	23.10	33.08
Cuyahoga	9	1.38	1.89	23.80	37.29
Darke	14	1.26	1.68	21.27	31.33
Defiance	8	1.22	1.64	22.75	29.60
Delaware	15	1.31	1.72	19.69	27.93
*Erie	10	1.40	1.67	23 91	33.55
*Fairfield	16	1.25	1.65	21.89	30.43
Fayette	7	.86	1.14	19 94	24.71
Franklin	17	1.15	1.51	22.10	30.81
Fulton	8	1.53	1.93	24.38	33.80
Gallia	8	.94	1.22	19.45	25.33
Geauga	14	1.37	1.85	24.60	34.31
Greene	10	1.12	1.45	21.56	32.33
Guernsey	14	1.08	1.47	19 75	28.37
Hamilton	9	1.19	1.58	21.43	31.29
Hancock	16	1.31	1.76	22.06	31 40
Hardin	12	1.27	1.67	21.77	30.73
Harrison	14	1.16	1.60	21.23	30.78
Henry	13	1.30	1.64	22.29	32 09
*Highland	20	1.03	1.34	19.43	26 45
Hocking	7	1.03	1.38	21.60	29 00
Holmes	9	1.23	1.58	21.80	30.83
Huron	16	1.55	2.02	23.47	32.33
Jackson	7	.96	1.27	18.00	25.40
Jefferson	13	1.16	1.59	20.77	28.46
Knox	17	1.29	1.68	21.94	30.38
Lake	7	1.38	1.93	22.28	36.00
Lawrence	9	.83	1.11	19 90	26.22
*Licking	28	1.20	1.63	20.70	28.33
Logan	16	1.32	1.55	20.22	25.00
Lorain	15	1.34	2.00	25.42	35.86
Lucas	10	1.35	1.75	22.90	34.44
Madison	9	1.02	1.29	21.90	28.66
Mahoning	10	1.23	1.70	24.55	33.71
Marion	13	1.48	2.02	23.60	32.14
Medina	11	1.48	1.75	23.82	32.44
Meigs	10	.90	1.25	18.78	29.71
Mercer	12	1.38	1.77	24.80	31.81
Miami	9	1.36	1.72	21.72	26.28
Monroe	15	1.06	1.46	16.29	24.78
Montgomery	11	1.18	1.53	21.31	30.29
*Morgan	17	1.04	1.48	19.50	24.32
*Morrow	18	1.33	1.80	22.72	29.61
Muskingum	22	1.13	1.57	19.96	29.27
*Noble	16	1.20	1.37	18 76	29.17
Ottawa	7	1.35	1.80	23.58	35.00
Paulding	9	1.32	1.92	21.80	32.87
Perry	13	1.13	1.69	24.46	33.73
Pickaway	14	.91	1.20	20 73	27.70
Pike	8	.92	1.14	19.50	26.87
Portage	13	1.48	1.80	24.60	36.50
Preble	12	1.31	1.65	24.36	29.40

TABLE I.—Continued Rate of wages paid farm laborers. Gathered and returned by official correspondents of the Ohio Department of Agriculture.

Counties	No. townships reported	What is average wage paid to farm hands			
		By day with board	By day without board	By month with board	By month without board
Putnam	9	$1.36	$1.72	$21.65	$28.20
Richland	15	1.45	1.87	22.00	31.45
Ross	11	.96	1.23	19.50	27.32
Sandusky	9	1.39	1.80	25.70	37.00
Scioto	15	1.00	1.30	20.14	29.20
Seneca	12	1.46	1.89	24.25	34.30
Shelby	9	1.33	1.72	22.12	29.17
Stark	14	1.27	1.77	23.43	36.22
Summit	16	1.50	1.81	22.81	34.09
Trumbull	19	1.24	1.68	23.63	33.06
Tuscarawas	17	1.11	1.49	22.45	31.30
Union	14	1.30	1.66	21.61	29.73
Van Wert	8	1.33	1.64	22.50	31.57
Vinton	10	.88	1.29	20.66	29.80
Warren	9	1.11	1.58	21.50	29.50
Washington	19	.96	1.36	18.62	25.79

*Counties with townships having more than one reporter

In the spring of 1913 inquiries regarding the various rates of wages paid for labor of different classes were sent to the mayors of Ohio municipalities having a population between 2,500 and 10,000. Table II gives the results of these inquiries.

TABLE II. Showing rates of wage and days worked per year for different classes of workmen in 34 Ohio municipalities with an average population of 5,831.

Municipality number	Population	Common laborer				Common laborer with team				Carpenter				Stone mason			
		Wage per day		Hours worked per day	Days worked per year	Wage per day		Hours worked per day	Days worked per year	Wage per day		Hours worked per day	Days worked per yr.	Wage per day		Hours worked per day	Days worked per yr.
		Min.	Max.			Min.	Max.			Min.	Max.			Min.	Max.		
1	6,795	$1.75	$2 00	10	190	$5.00	$6.00	10	175	$2.00	$3 50	10	225	$3.50	$4.50	10	185
2	5,209	2.00	2.50	10	200	$5.00	6.00	10	200	2.50	3.50	10	250	4.50	5.00	9	140
3	5,222	1.75	2.00	10	230	3.50	4.00	10	230	3.50	....	10	200	....	....	..	....
4	6,621	1.50	2.00	10	300	4.00	4.50	10	220	2.50	3.50	10	250	4.00	5.00	10	200
5	9,603	1 75	....	9	190	5.00	....	9	140	3 50	....	8	240	5.00	.	8	100
6	3,028	2.00	5.00	8	300	4.50	....	8	300	3.00	3.00	8	260	5.00	5.00	8	156
7	4,665	1.75	2.25	10	260	3.50	4.00	10	260	3.00	....	10	230	5.00	....	10	200
8	3,187	1.75	2.50	10	250	3.50	4 00	10	250	2.50	3.00	9	280	4.00	5.00	9	250
9	9,597	1.75	2.00	10	230	2.00	2.00	10	230	3.00	3.50	8	230	5.00	5.50	8	230
10	7,214	....	2 00	10	250	....	4 50	10	250	2 75	3.20	10	250	3.50	6.00	10	250
11	5,560	1.25	1.50	9	260	3.00	3.50	9	260	2.50	2.75	9	208	3.50	4.00	9	156
12	3,736	1.35	2.00	10	300	5 00	5.50	9	300	4.00	....	8	300	....	4.00	8	300
13	6,237	1.75	2.50	10	200	3.50	4 00	10	200	1.75	3.50	10	250	3.50	4.00	10	160
14	4,488	....	1.75	10	203	....	4.50	10	222	....	....	..	....	....	....	.	....
15	7,185	1.75	2 00	10	260	4.00	4 00	10	200	3 00	3 00	10	200	4.00	4.00	10	200
16	4,850	1 50	2.00	10	260	4.00	4.50	10	260	2.50	3.50	10	260	3 50	4.00	10	260
17	9,133	1.50	2.00	10	208	4.50	5.00	9	208	3.20	3.40	8	208	....	5.00	8	208
18	2,734	1 50	2.00	10	240	4.00	5.00	10	240	2.50	3.00	10	275	3.00	5.00	10	275
19	4,271	1.50	2 00	10	270	3.50	4.00	10	200	2.25	3.25	10	300	2.25	3.25	10	250
20	2,759	1 75	2.25	10	250	4.00	4.50	10	180	2.50	3.00	10	200	5.00	6.00	10	100
21	9,087	1.50	2.00	10	290	3.50	5.00	10	270	2 25	3.50	8	270	....	5.00	8	150
22	8,542	1.60	2.00	10	250	....	4.50	10	200	2.50	3 50	10	150	3.00	4 50	10	150
23	8,361	1 75	2.00	9	300	....	4.95	9	250	3.25	3.25	8	250	....	5.20	8	225
24	4,365	1.50	2.00	10	200	5.00	5.50	10	200	3.00	3.50	10	225	4.00	4.50	8	200
25	4,023	1.25	1 50	9	200	4.50	....	9	200	2.50	3.50	8	200	2.50	3.50	8	175
26	8,943	1.75	2.25	9	300	4.50	5.00	9	200	3.25	3.40	9	200	4 80	4 80	8	200
27	4,903	1.75	2.50	10	300	5.00	....	10	250	2.50	3.00	10	250	4.00	5.00	9	200
28	6,607	1.75	2.00	10	200	3.75	4.50	10	200	2.50	3.00	10	250	4.00	5.50	10	200
29	5,732	1.35	1.75	10	280	3.25	3.75	10	260	1.75	2.25	10	256	3.50	4.00	10	220
30	6,122	1.75	2.00	10	230	3.50	4.00	10	156	2.50	3.00	10	156	....	5.00	10	156
31	4,751	1.50	2.00	10	300	4.50	5.00	9	300	2.50	3.50	9	300	4.00	4.00	9	150
32	7,157	1.50	2.50	9	300	3.50	5.00	9	300	2.50	4.00	9	300	2.50	5.00	10	156
33	3,073	1.50	2.00	10	250	4.00	4.50	10	212	2.25	3.00	9	225	....	....	..	....
34	4,491	1.50	2.25	10	200	3.50	4.00	10	200	3.00	4.50	10	225	4.00	5.00	10	175
Total....	198,251	$51 80	$71.00	332	8,391	$120.00	$135.20	329	7,723	$88.70	$95.50	308	7,873	$100.55	$136.25	285	5,977
Average.	5,831	1.62	2.15	9.76	246.79	4.00	4.51	9.68	227.15	2.69	3.29	9.33	238.58	3.87	4.70	9.19	192.81
Rate per hour.....		.166	.22	.....	.....	.413	.466	.....	.....	.29	.353	.....	.....	.405	.511	.....	.....
Av. daily wage		$1.89				$4.25				$2 97				$4.31			
Av. rate per hour...		.194				.439				.318				.469			

TABLE II.—Continued. Showing rates of wage and days worked per year for different classes of workmen in 34 Ohio municipalities with an average population of 5,831

Municipality number	Population	Brick mason				Painter				Plumber			
		Wage per day		Hours worked per day	Days worked per year	Wage per day		Hours worked per day	Days worked per year	Wage per day		Hours worked per day	Days worked per year
		Min.	Max.			Min.	Max.			Min.	Max.		
1	6,795	$5.00	$5.00	10	180	$2.00	$3.50	10	200	$5.00	$5.00	10	225
2	5,209	4.90	5.40	9	200	2.50	3.00	10	200	4.00	5.00	10	250
3	5,222	....	....	..	...	....	....	..	...	....	....	..	....
4	6,621	4.00	5.00	10	200	2.50	3.20	10	220	2.70	3.50	9	300
5	9,603	5.00	....	8	140	2.75	....	8	100	3.50	....	9	240
6	3,028	5.00	5.00	8	182	3.20	3.20	8	208	4.00	4.00	8	234
7	4,665	5.00	....	10	200	3.00	....	10	230	5.00	....	10	260
8	3,187	4.00	5.00	9	250	3 00	3.50	10	280	3.50	5.00	10	300
9	9,597	5.00	5.50	8	230	3.00	3.50	8	230	4.00	6.00	10	300
10	7,214	3.50	6.00	10	250	2.50	3.00	10	250	4.50	4.50	10	250
11	5,560	5.00	6.00	9	156	2.00	3.00	9	156	....	....	..	...
12	3,736	....	5.20	8	300	....	3.60	8	300	...	4.50	8	300
13	6,237	2.70	5.60	9	200	2.00	3.00	10	180	2.50	5.00	10	250
14	4,488	....	....	..	...	...	....	..	...		....	..	..
15	7,185	4.00	4.00	10	200	3.00	3.00	10	200	4.00	4.00	10	200
16	4,850	6.00	6.00	10	260	2.00	2.50	10	260	3.00	3.50	10	260
17	9,133		4.80	8	208	....	3.60	8	208	. .	4.00	8	234
18	2,734	3.00	5.00	10	275	2.50	3.00	10	250	2.50	3.50	10	250
19	4,271	3.50	6.00	10	200	2.25	3.00	10	275	3.50	5.00	10	300
20	2,759	5.00	6.00	10	130	2.00	3.00	10	120	3.50	4.00	10	250
21	9,087	....	6.00	8	150	2.50	3.50	9	180	2.00	4.00	9	270
22	8,542	4.50	5.60	10	150	2.50	3.50	10	150	5.00	6.00	10	250
23	8,361	...	5.20	8	225	3.00	3.00	9	225	...	4.50	9	250
24	4,365	4.00	4.50	8	200	2.00	2.50	8	225	3.00	5.00	9	300
25	4,023	3.50	4.50	8	175	2.00	3.00	9	125	4.50	5.50	8	125
26	8,943	5.00	5.00	8	200	3.00	3.15	9	200	3.60	3.60	8	250
27	4,903	4.00	5.00	9	200	3.00	3.50	10	200	4.50	....	10	300
28	6,607	6.00	6.50	10	200	2.50	3.00	10	225	3.50	4.00	10	275
29	5,732	4.00	4.80	8	230	2.00	2.25	10	250	3.00	3.50	10	300
30	6,122	...	5.00	10	156	2.00	2.50	10	156	4.00	5.00	10	234
31	4,751	4.50	4.50	8	150	2.50	3.00	9	150	3.00	3.50	9	300
32	7,157	2.50	6.00	10	156	2.50	3.50	9	260	3.50	4.00	10	300
33	3,073	4.00	5.00	8	212	2.25	3.00	10	225	2.50	3.50	10	237
34	4,491	4.00	5.00	10	175	2.00	3.00	10	240	2.50	4 00	10	275
Total....	198,251	$115.60	$158.10	289	6,340	$73.95	$93.00	301	6,678	$99.80	$122.60	294	8,069
Average.	5,831	4.28	5.27	9.03	198.12	2.46	3.10	9.41	208.69	3.56	4.38	9.48	260.29
Rate per hour.....		.474	.584	...	.	.261	.329	. .		.376	.462	. ..	..
Av. daily wage....		$4.80				$2.78				$3.97			
Av. rate per hour..		.532				.295				.419			

CLASSIFICATION OF THE RECORDS

In getting together the individual records of fields of corn and combining them, they naturally fall into certain groups or classes. One of the first classifications necessary to make is based on the general method by which the corn crop is harvested. The following outline shows the general methods adopted for this classification, and Tables III, IV, V and VI respectively, give the data by counties classified in that manner.

Grain harvested:—All the hours of labor reported. May include any combination of the following special methods of harvesting, with their attendant operations:

- Cut by hand
- Cut by machine
- Husked by hand—either from shock or standing stalk
- Husked by machine
- Fodder shredded.

Hogged off:—

Siloed:—Cut in the field either by hand or by machine.

Contract labor additional:—A part or all of the labor, especially in harvesting, done at a contract price and the hours of such labor not reported.

TABLE III. Labor required when grain is harvested

County	Number of fields reported	Total acreage of fields	Total hours of labor		Hours of labor per acre	
			Man	Horse	Man	Horse
Allen	10	112.97	6,493.25	6,910 50	57.48	61.17
Ashtabula	1	4.21	273.44	267 22	64.95	63.47
Athens	1	2.83	213.75	160.00	75.53	56.54
Belmont	3	31.53	2,673.77	1,984.89	84.80	62.95
Coshocton	7	88.21	7,037 50	6,845.50	79 78	77.60
Crawford	11	115.27	5,667.25	5,046 50	49.16	43.12
Geauga	6	23.89	1,524 75	1,442.75	63.82	60.39
Greene	2	7.47	307 50	304.75	41.16	40.80
Hardin	7	76.37	3,103.32	4,151.24	40 64	54.36
Harrison	2	13.61	971.00	759.50	71.34	55.80
Holmes	12	133.28	7,633.49	9,065 33	57.27	68.02
Huron	8	96.10	4,755 19	5,966 65	49 48	62.09
Licking	3	29.56	1,437 25	1,616.00	48.62	54.67
Lorain	2	7.37	632.50	646 50	85.82	87.72
Madison	4	122.81	4,686.50	5,261.25	38.16	42.84
Meigs	6	8.85	863.75	710.75	97.60	80.31
Pickaway	6	202.34	8,380 81	8,923.76	41.42	44.10
Preble	11	252.53	7,406.50	13,989 00	29.33	55 40
Putnam	2	20.66	1,058.00	1,029.00	51.21	49 81
Seneca	1	12.01	660.75	514.25	55 02	42.82
Warren	3	39.33	1,723.75	1,584.50	43.83	40.29
Total	108	1,401.20	67,504 02	77,679.84		
Average		12.97			48.18	55.44

TABLE IV. Labor required when corn is hogged off.

County	Number of fields reported	Total acreage of fields	Total hours of labor		Hours of labor per acre	
			Man	Horse	Man	Horse
Crawford	2	18 07	416.75	732.00	23.06	40.51
Hardin	2	10 92	170.75	342.75	15.64	31.39
Holmes	4	22.89	693.65	1,137 52	30.30	49.70
Madison	3	20.67	577.50	962.25	27.94	46.55
Pickaway	2	25.06	537.34	1,010 20	21.44	40 31
Preble	3	13.87	277.00	515.00	19.97	37.13
Warren	1	6.02	74.50	143.00	12.38	23.75
Total	17	117.50	2,747 49	4,842.72		
Average	..	6.91	.....	.....	23.38	41 21

TABLE V. Labor required when corn is siloed.

County	Number of fields reported	Total acreage of fields	Total hours of labor		Hours of labor per acre	
			Man	Horse	Man	Horse
Allen	2	23.47	1,735.00	2,056 25	73.92	87.61
Ashtabula	2	10 59	580 86	647.69	54.85	61.16
Belmont	1	7.72	433.75	568.75	56.18	73.67
Geauga	4	29.06	1,769.00	2,089.50	60.87	71.90
Hardin	2	15.75	726.18	1,048.26	46.11	66.56
Harrison	1	10.70	433.25	431.25	40.49	40.30
Seneca	4	18.49	946 25	1,091.50	51.18	59.03
Total	16	115.78	6,624.29	7,933.20		
Average	.	7.24	.....	.....	57 21	68.52

TABLE VI. Labor required when there is contract labor additional.

County	Number fields reported	Total acreage of fields	Total hours of labor		Hours of labor per acre		Total value of contract labor	Value of contract labor per acre
			Man	Horse	Man	Horse		
Adams	4	66 71	2,850.75	3,557.25	42.73	53.32	$113.89	$1.71
Allen	2	51 59	3,351.75	3,770.25	64.97	73.08	42 87	.83
Athens	5	10 04	656.00	774.25	65.34	77 13	21 91	2 18
Belmont	1	10.28	635.25	597.50	61.79	58.12	16 75	1 63
Clinton	1	32.00	1,118.50	2,002.00	34.95	62 56	12 60	.39
Geauga	1	6 52	318.50	330.75	48 86	50 74	4 50	.69
Greene	2	48.37	1,421.25	1,852 75	29.38	38 30	111.48	2 30
Hardin	3	58.19	2,482.00	3,458.50	42.65	59 43	48 18	83
Holmes	2	34 28	1,554.57	2,734.96	45 35	79 78	44 10	1 29
Huron	3	62.00	3,607.21	3,904.57	58.18	62.98	38 76	63
Madison	8	199.96	7,887.25	9,692.25	39 44	48 47	297 70	1.49
Pickaway	2	76.57	3,060.39	3,923.86	39 97	51.25	81 96	1.07
Preble	1	17.71	357.50	817.00	20.19	46 13	34.40	1 94
Seneca	1	13.61	938.75	723.50	68.98	53.16	4.20	.31
Total	36	687.83	30,239.67	38,139.39			$873.30	
Average	..	19.11	.....	.....	43.96	55.45	.. ..	$1.27

TABLE VII. Recapitulation of Tables III, IV, V and VI.

Table	Number of fields	Total acreage of fields	Average size of fields	Total hours of labor		Hours of labor per acre		Horse hours used per hour of man labor
				Man	Horse	Man	Horse	
Table III..	108	1,401.20	12.97	67,504.02	77,679.84	48.18	55.44	1.15
Table IV..	17	117.50	6 91	2,747.49	4,842.72	23.38	41.21	1.76
Table V...	16	115.78	7.24	6,624.29	7,933.20	57.21	68.52	1.20
Table VI*.	36	687.83	19.11	30,239.67	38,139.39	43.96	55.45	1.26

*$1.27 per acre additional for contract labor.

Fig. 3. Some methods of harvesting corn.

While one would hardly be justified in combining the totals of these various methods and deducing therefrom an average labor cost of producing the corn crop, it is a significant fact that the average of all of these fields, regardless of the method of harvesting, is 46.12 man hours and 55.37 horse hours per acre, with 1.20 horse

hours per hour of man labor, which averages are not materially different from those shown in Table III. However, the data for plotting the charts referred to in this Bulletin, Figures 4, 5, 7, 8, 9, 10 and 11, were secured from Table III.

If the rates of man and horse labor (16c and 8c respectively), previously mentioned, be used in connection with the average hours per acre (48.18 man hours and 55.44 horse hours) as shown in Table III, the average cost of labor only, on the 108 fields of corn is found to be $12.14 per acre.

From Table VIII the labor cost of producing an acre of corn may be determined when varying rates of man and horse labor are used in connection with the average hours shown in Table III. This cost per acre, including both man and horse labor at any given rate for each, is determined by finding the rate of man labor on the left, and following that rate across horizontally until we reach the column which has the selected horse rate at the top. For example, if the rates of 16c per hour for man and 8c per hour for horse labor are used, the rate of 16c is found on the left, and following this line across until the column headed 8c is reached, it is found that the cost of man and horse labor combined is $12.14.

TABLE VIII: Showing total labor cost per acre at varying prices per hour for man and horse labor: based on 48.18 man hours and 55.44 horse hours per acre, as per Table III.

Man hour prices	Horse hour prices											
	5c	6c	7c	8c	9c	10c	11c	12c	13c	14c	15c	16c
10c	$7 59	$8.14	$8.70	$9.25	$9.81	$10.36	$10.92	$11.47	$12.03	$12 58	$13.13	$13.69
12c	8.55	9.11	9.66	10.22	10.77	11.33	11.88	12.43	12.99	13.54	14.10	14.65
14c	9.52	10.07	10.63	11.18	11.73	12.29	12.84	13.40	13.95	14.51	15.06	15.62
16c	10.48	11.04	11.59	12.14	12.70	13.25	13.81	14.36	14.92	15.47	16.02	16.58
18c	11.44	12.00	12.55	13.11	13.66	14.22	14.77	15.33	15.88	16.43	16 99	17.54
20c	12.41	12.96	13.52	14.07	14.63	15.18	15.73	16.29	16.84	17.40	17.95	18.51
22c	13.37	13.93	14.48	15.03	15.59	16.14	16.70	17 25	17.81	18.36	18.92	19.47
24c	14.34	14 89	15.44	16.00	16.55	17.11	17.66	18.22	18.77	19.32	19.88	20.43
26c	15.30	15.85	16.41	16 96	17.52	18.07	18.63	19.18	19.73	20.29	20 84	21.40
28c	16.26	16.82	17.37	17.93	18.48	19.03	19.59	20.14	20.70	21.25	21.81	22.36
30c	17.23	17 78	18.33	18.89	19.44	20.00	20.55	21.11	21.66	22.22	22.77	23.32
32c	18.19	18.74	19.30	19.85	20.41	20.96	21.52	22.07	22 62	23.18	23.73	24.29
34c	19.15	19.71	20.26	20.82	21.37	21.93	22.48	23.03	23.59	24.14	24.70	25.25
36c	20.12	20.67	21.23	21.78	22.33	22 89	23.44	24.00	24.55	25.11	25.66	26.22
38c	21.08	21.63	22.19	22.74	23.30	23.85	24.41	24.96	25.52	26.07	26.62	27.18
40c	22.04	22.60	23.15	23.71	24.26	24.82	25.37	25.92	26.48	27.03	27.59	28.14
42c	23.01	23.56	24.12	24.67	25.23	25.78	26.33	26.89	27.44	28.00	28.55	29.11
44c	23.97	24.53	25 08	25.63	26 19	26.74	27 30	27.85	28.41	28.96	29.52	30.07
46c	24.93	25.49	26.04	26.60	27.15	27.71	28.26	28.82	29.37	29.92	30.48	31.03
48c	25.90	26.45	27.01	27.56	28.12	28.67	29.22	29.78	30.33	30.89	31.44	32.00
50c	26.86	27.42	27.97	28.53	29.08	29.63	30.19	30.74	31.30	31.85	32.41	32.96
52c	27.83	28.38	28.93	29.49	30.04	30 60	31.15	31.71	32.26	32.82	33.37	33.92
54c	28.79	29.34	29.90	30.45	31.01	31.56	32 12	32.67	33.22	33.78	34.33	34 89
56c	29.75	30.31	30.86	31.42	31.97	32 52	33.08	33.63	34.19	34.74	35.30	35.85
58c	30.72	31.27	31.83	32.38	32.93	33.49	34.04	34.60	35.15	35.71	36.26	36.81
60c	31.68	32.28	32.79	33 34	33.90	34.45	35.01	35.56	36.12	36.67	37.22	37.78

Table IX will assist in calculating the number of bushels per acre of corn, at varying prices, which are necessary to pay the labor cost of production. The price per bushel is given at the top of the table, and the labor cost, as taken from Table VIII, is given at the left. The method of finding the number of bushels per acre is the same as was explained for finding the combined cost of man and horse labor. For example, if the total labor cost is $12.14, and the price per bushel is 40c, we find the $12.14 on the left and follow this across horizontally until we reach the column headed 40c where we find that the number of bushels per acre, at 40c per bushel, required to pay for that labor cost of production is 30.35 bu.

TABLE IX: Showing the number of bushels of corn per acre necessary to pay the labor cost of production at various costs and prices per bushel, no credit being allowed for value of stover.

Value of labor per acre	Price of corn per bushel										
	30c	35c	40c	45c	50c	55c	60c	65c	70c	75c	80c
$7.59	25.30	21.69	18 98	16.87	15.18	13.80	12.65	11.68	10.84	10.12	9.49
9.11	30 37	26.03	22.78	20.24	18.22	16.56	15.18	14.02	13.01	12.15	11.39
10.63	35.43	30.37	26.58	23.62	21.26	19.32	17.72	16.35	15.19	14.17	13.29
12.14	40.47	34.69	30.35	26.98	24.28	22.07	20.23	18.68	17.34	16.19	15.18
13.66	45.53	39.03	34.15	30.36	27.32	24.84	22.77	21.02	19.51	18.21	17.08
15 18	50.60	43.37	37.95	33.73	30.36	27.60	25.30	23.35	21.69	20.24	18.98
16.70	55.67	47 71	41.75	37.11	33.40	30.36	27.83	25.69	23.86	22.27	20.88
18.22	60.73	52.06	45 55	40.49	36.44	33.13	30 37	28.03	26.03	24.29	22.78
19.73	65.77	56.37	49.32	43.84	39.46	35.87	32.88	30.35	28.19	26.31	24.66
21.25	70.83	60.71	53.12	47.22	42.50	38.64	35 42	32.69	30.36	28.33	26.56
22.77	75 90	65.06	56.92	50.60	45.54	41.40	37.95	35.03	32.53	30.36	28.46
24.29	80.97	69.40	60.72	53.97	48.58	44.16	40.48	37.37	34.70	32.39	30.36

During the period 1905 to 1911, inclusive, the average annual area of corn in Ohio was 3,005,981 acres; the average annual total production was 112,773,950 bushels, or an average yield per acre of 37.52 bushels.* From the yearbooks of the United States Department of Agriculture for this same period the mean farm price of corn in Ohio on December first was found to be 51c. At this price per bushel for corn it would require 23.8 bushels to pay the labor cost of production previously mentioned—$12.14. This leaves a difference of 13.72 bushels, or, at 51c per bushel, $7.00, with which to pay for the fertilizer, seed, land rental, machinery cost, etc. When these expenses are paid there certainly cannot be much left as profits.

Referring to the contract labor table (Table VI) it will be noted that the hours of labor per acre actually reported are less than those shown in Table III, and that, at the assumed rates, the combined

*From the reports of the Ohio State Board of Agriculture.

labor cost exclusive of contract labor is but $11.47. From the same table it will be noted that on these fields there is an average of $1.27 per acre to be added for work done at a contract price, for which the hours of labor are not reported. This, added to the $11.47, brings the total labor cost for that class of fields up to $12.74 per acre.

TABLE: Showing data in Table III grouped according to sections.

County	Number of fields reported	Total acreage of fields	Total hours of labor		Hours of labor per acre	
			Man	Horse	Man	Horse
Southeast section:						
Athens	1	2.83	213.75	160.00	75.53	56.54
Belmont	3	31.53	2,673.77	1,984.89	84.80	62.95
Coshocton	7	88.21	7,037.50	6,845.50	79.78	77.60
Harrison	2	13.61	971 00	759.50	71.34	55.80
Holmes	12	133.28	7,633.49	9,065.33	57.27	68.02
Meigs	6	8.85	863.75	710.75	97.60	80.31
Total	31	278.31	19,393.26	19,525.97		
Average		8.98			69.68	70.16
Northeast section:						
Ashtabula	1	4.21	273.44	267.22	64.95	63.47
Geauga	6	23.89	1,524.75	1,442.75	63.82	60.39
Lorain	2	7.37	632.50	645.50	85.82	87.72
Total	9	35.47	2,430.69	2,356.47		
Average		3.94			68.53	66.44
Northwest section:						
Allen	10	112.97	6,493.25	6,910.50	57.48	61.17
Crawford	11	115.27	5,667.25	5,546.50	49.16	48.12
Hardin	7	76.37	3,103.32	4,151.24	40.64	54.36
Huron	8	96.10	4,755.19	5,966.65	49 48	62.09
Licking	3	29.56	1,437.25	1,616 00	48.62	54.67
Putnam	2	20.66	1,058.00	1,029.00	51.21	49.81
Seneca	1	12.01	660.75	514.25	55.02	42.82
Total	42	462.94	23,175.01	25,734.14		
Average		11.02			50.06	55.59
Southwest section:						
Greene	2	7.47	307.50	304.75	41.16	40.80
Madison	4	122.81	4,686.50	5,261.25	38.16	42.84
Pickaway	6	202.34	8,380.81	8,023.76	41.42	44.10
Preble	11	252.53	7,406.50	13,989.00	29.33	55.40
Warren	3	39.33	1'723.75	1,584.50	43.83	40.29
Total	26	624.48	22,505.06	30,063.26		
Average		24.02			26.04	48 14

REGIONAL DISTRIBUTION

For reasons shown later these records group themselves into four sections with reference to their distribution over the State, which sections may be called the Southeast, Northeast, Northwest and Southwest. In these records the Southeast section includes the counties of Adams, Athens, Belmont, Coshocton, Harrison, Holmes

and Meigs. The Northeast is represented by Ashtabula, Geauga and Lorain. The Northwest section includes Allen, Crawford, Hardin, Huron, Licking, Putnam and Seneca, while the Southwest includes Clinton, Green, Madison, Pickaway, Preble and Warren counties. Table X groups the data of Table III according to sections as defined.

When the average hours per acre shown by Table X are reduced to dollars and cents (at 16c per hour for man and 8c per hour for horse labor) it is found that in the Southwest section the labor of producing the corn crop amounts to $9.62 per acre, or $2.52 per acre less than the state average of $12.14. On the other hand, in the Northeast section the labor amounts to $16.28 per acre, and in the Southeast section it is $16.76 per acre, considerably above the average of the state, whereas the labor in the Northwest section is costing an average of $12.46 per acre, or only 32 cents per acre more than the average of the state.

Figures 4 and 5 show graphically the percentage comparison of the four groups outlined in Table X, with the state average of the 108 fields so grouped. Table XI gives in tabular form the same data as are shown in Figures 4 and 5.

TABLE XI. Showing relative amount of labor expended per acre in growing corn in the various sections of Ohio as compared with the State average, and the percentage variation from the State average in each section.

Partial items	Southeast section 31 fields, av. 8.98 A.		Northeast section 9 fields, av. 3.94 A.		Northwest section 42 fields, av. 11.02 A.		Southwest section 26 fields, av. 24.02 A.		State average 108 fields, av. 12.97 acres
	Hours per acre	Variation Percent	Hours per acre	Variation Percent	Hours per acre	Variation Percent	Hours per acre	Variation Percent	Hours per acre
Man labor									
Preparation of seed bed	9 21	16	11.86	50	8.12	3	6.97	—12	7 92
Planting	2.92	64	2.17	22	1.85	4	1.21	—32	1.78
Cultivating	15 52	57	11.53	17	9 13	—8	7.00	—29	9.89
Harvesting	26.65	27	33.37	59	22.95	9	16.29	—22	20.98
Total*	69.68	45	68.53	42	50.06	4	36.04	—25	48.18
Horse labor									
Preparation of seed bed	25.25	23	27.03	31	19.44	—6	18.88	—8	20.58
Planting	2.28	13	2.35	16	2.12	5	1.80	—11	2.02
Cultivating	12.28	—7	11.64	—12	13.00	—1	13.75	4	13.16
Harvesting	14.28	15	14.72	19	13.52	9	10.61	—14	12.40
Total*	70.16	27	66.44	20	55.59	3	48.14	—13	55.44

*As explained on page 90 several of the miscellaneous partial items have not been shown. The totals, however, include all partial items.

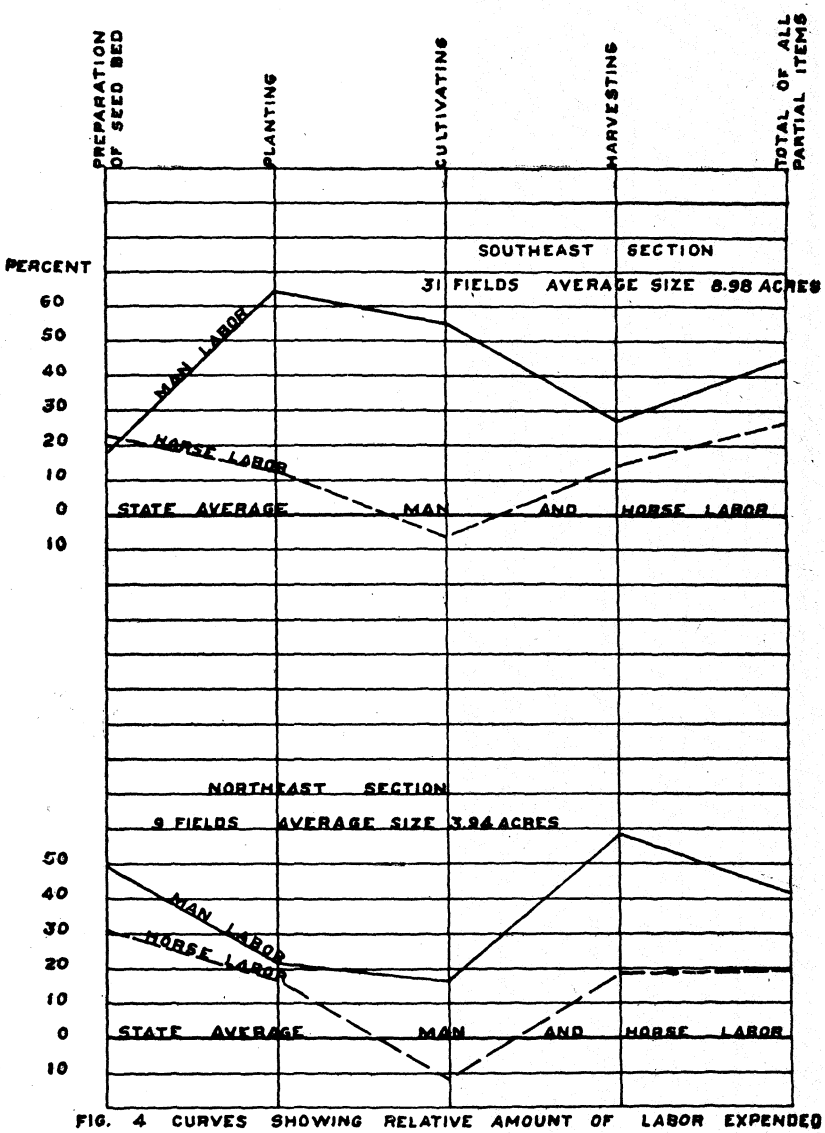

FIG. 4 CURVES SHOWING RELATIVE AMOUNT OF LABOR EXPENDED PER ACRE IN GROWING CORN IN THE SOUTHEAST AND NORTHEAST SECTIONS OF OHIO AS COMPARED WITH THE STATE AVERAGE OF 108 FIELDS

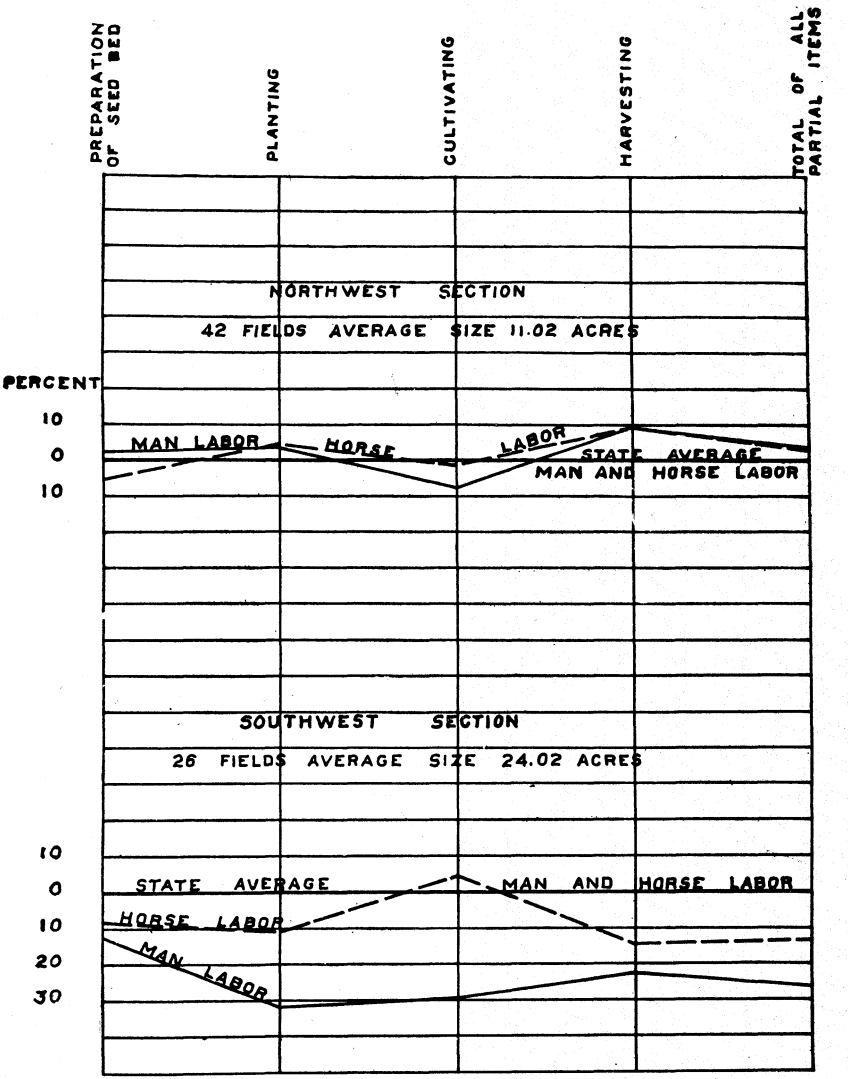

FIG. 5 CURVES SHOWING RELATIVE AMOUNT OF LABOR EXPENDED PER ACRE IN GROWING CORN IN THE NORTHWEST AND SOUTHWEST SECTIONS OF OHIO AS COMPARED WITH THE STATE AVERAGE OF 108 FIELDS

In these and succeeding charts of a similar nature the straight horizontal line is considered as the state average for both man and horse hours. Each partial item is then plotted as so many percent above or below the state average. For example, in Figure 4 the state average man hours for preparation of the seed bed is 7.92 hours. The average for the fields in the Southeast section is 9.21 hours, which is 16.3 percent more than the state average. Therefore, in Figure 4 the man hours for preparation of seed bed are plotted at 16 percent above the straight line which, as stated, represents the state average. Likewise the state average horse hours for the preparation of the seed bed is 20.58 hours. In the Southeast section 25.25 horse hours are required for this item, which is 22.69 percent more than the state average. Accordingly, in Figure 4 the horse hours for preparation of seed bed are plotted as 23 percent above the same straight line, since it represents the state average of horse hours as well as of man hours.

Tables X and XI or Figures 4 and 5 show that there is a gradual decrease in both man and horse hours per acre, as well as in the total labor cost per acre, in passing from the Southeast through the Northeast and Northwest to the Southwest section. There are a number of factors by which this decrease can be explained. In the Southeast section the topography is perhaps the greatest limiting factor. In this section the country is rough and broken, and while the average size of the farms is above the average of the State, yet the topography necessitates very irregular and not infrequently very small cultivated fields.

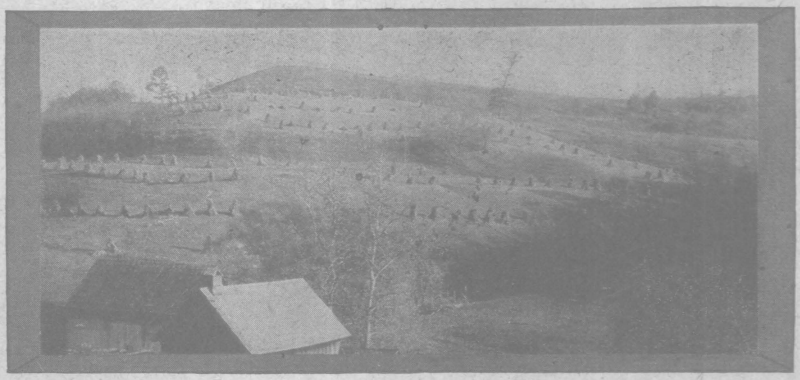

Fig. 6. Growing corn on the hillsides of Southeastern Ohio.

In the Northeast section the origin of the early settlers is probably an important factor, influencing as it does the type of farming, the size of farms and size of tools used. From a

topographic standpoint there is scarcely any reason why the farmers in this section should not use larger tools, utilizing more horses per man, and thus, in a measure, reducing the labor cost of production. However, the early settlers of this region came from New England, a rugged and broken country, where 70 to 80 acres were considered to be a large farm. They were thus familiar with the use of smaller tools and consequently adopted them in their work in Ohio. In this section also there is comparatively little tile drainage, the lack of which doubtless makes the soils heavier and harder to work, so that the farmers cannot use their labor so effectively. In the Northwest and especially the Southwest sections the influence of the more level country, better drainage, the use of larger tools and of more horses per workman is apparent.

SIZE OF FIELD

However, the difference in labor cost cannot all be explained on the basis of regional distribution. The size of fields must also be taken into consideration. A great deal has been said and written regarding the size of farms. Many who are not engaged in farming, and even some farmers, believe that smaller farms better tilled would bring greater profits than the larger farms. There may be room for improvement in the cultural methods on the larger farms, but as Warren has shown in Bulletin 295, of the Cornell University Experiment Station, the small farms have many disadvantages. He shows that while the receipts per acre on small farms are more than on the larger ones, the single item of labor on the small farm is so great that it more than offsets the difference in receipts. This is true not only for man labor, but also for horse labor. While only a limited amount of farm management survey work has been done in this state, so far as we have gone the same conditions are found in the areas that have been surveyed. As a general rule small farms must mean smaller fields, and accordingly we would expect the labor cost to increase as the size of the field decreases. This we do find, as is shown by Table XII and Figures 7, 8 and 9, the data for which were secured by regrouping Table III. These tables show the average percentage variation due to size of fields as compared with the average of all the 108 fields. While the man and horse labor may not both decrease as the size of the field increases, yet the combined cost, expressed in dollars and cents, does constantly decrease as the size of the field increases. In Table XIII will be found a probable explanation as to why the man or horse hours do not decrease uniformly as the size of fields increase.

TABLE XII. Showing relative amount of labor expended per acre in growing corn on various sized fields, and the percentage variation from the State average for each group of fields.

Partial items	Group .01—2.49 A. 15 fields, av. 1.65 A.		Group 2.5—4.99 A. 12 fields, av. 3.73 A.		Group 5—9.99 A. 19 fields, av. 7.50 A.		Group 10—14.99 A. 33 fields, av. 12.22 A.		Group 15—19.99 A. 8 fields, av. 17.72 acres		Group 20—24.99 A. 10 fields, av. 21.52 acres		Group 25 A. and over, 11 fields, av. 39 acres		State average 108 fields, av. 12.97 A.
	Hours per acre	Variation Percent	Hours per acre	Variation Percent	Hours per acre	Variation Percent	Hours per acre	Variation Percent	Hours per acre	Variation Percent	Hours per acre	Variation Percent	Hours per acre	Variation Percent	Hours per acre
Man labor															
Preparation of seed bed	12.89	63	9.26	17	10.06	27	8.40	6	7.37	−7	6.23	−21	7.38	−7	7.92
Planting	3.94	121	1.49	−16	2.29	29	2.33	31	1.86	4	1.13	−36	1.32	−26	1.78
Cultivating	22.43	127	11.52	16	15.57	57	10.69	8	9.20	−7	8.31	−16	7.40	−25	9.89
Harvesting	31.69	51	28.22	34	26.19	25	24.64	17	22.89	9	15.14	−28	16.81	−20	20.98
Total*	84.79	76	59.53	24	62.03	29	56.63	18	50.76	5	36.20	−25	37.14	−23	48.18
Horse labor															
Preparation of seed bed	26.69	30	23.55	14	22.58	10	21.66	5	21.00	2	18.28	−11	19.30	−6	20.58
Planting	3.28	62	2.40	19	2.47	22	2.05	2	2.14	6	1.63	−19	1.88	−7	2.02
Cultivating	12.92	−2	12.36	−6	13.03	−1	12.49	−5	11.77	−11	14.91	13	13.54	3	13.16
Harvesting	12.91	4	14.82	20	12.19	−2	13.43	8	16.04	29	10.46	−16	11.04	−11	12.40
Total*	69.21	25	63.31	14	57.72	4	60.53	9	59.84	8	50.07	−10	49.81	−10	55.44

*See foot note to Table XI.

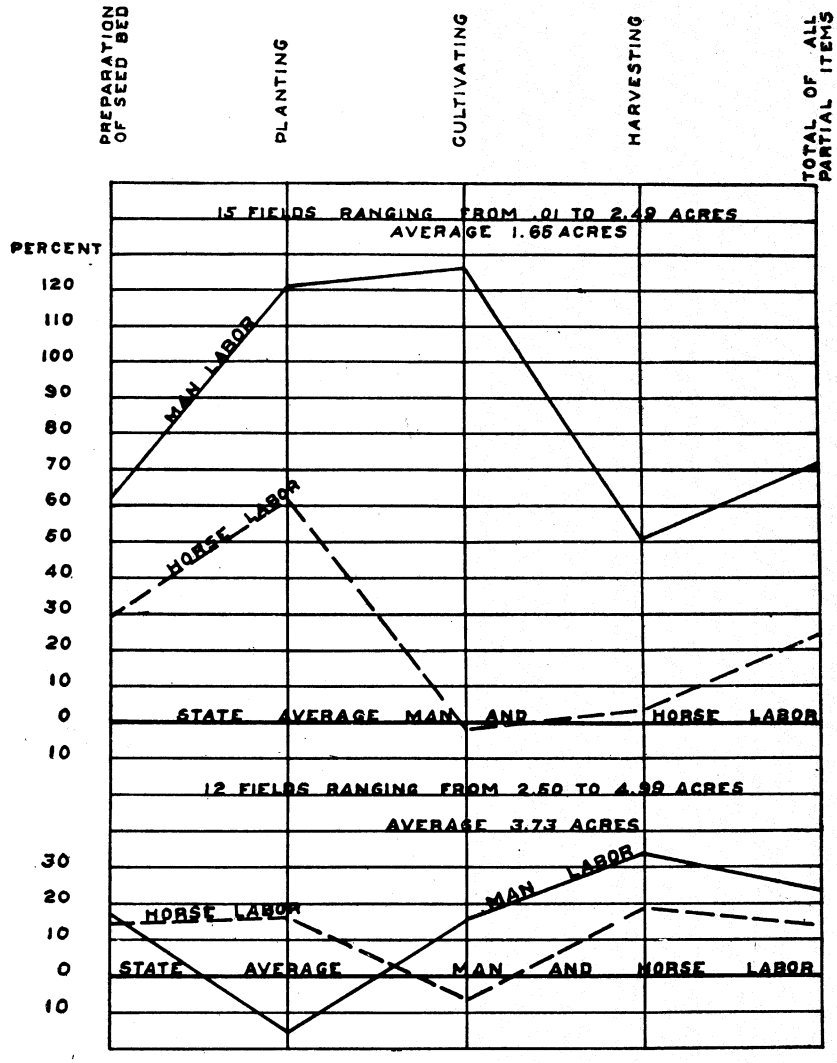

FIG. 7 CURVES SHOWING RELATIVE AMOUNT OF LABOR EXPENDED PER ACRE IN GROWING CORN IN VARIOUS SIZED FIELDS AS COMPARED WITH THE STATE AVERAGE OF 108 FIELDS AVERAGING 12.97 ACRES

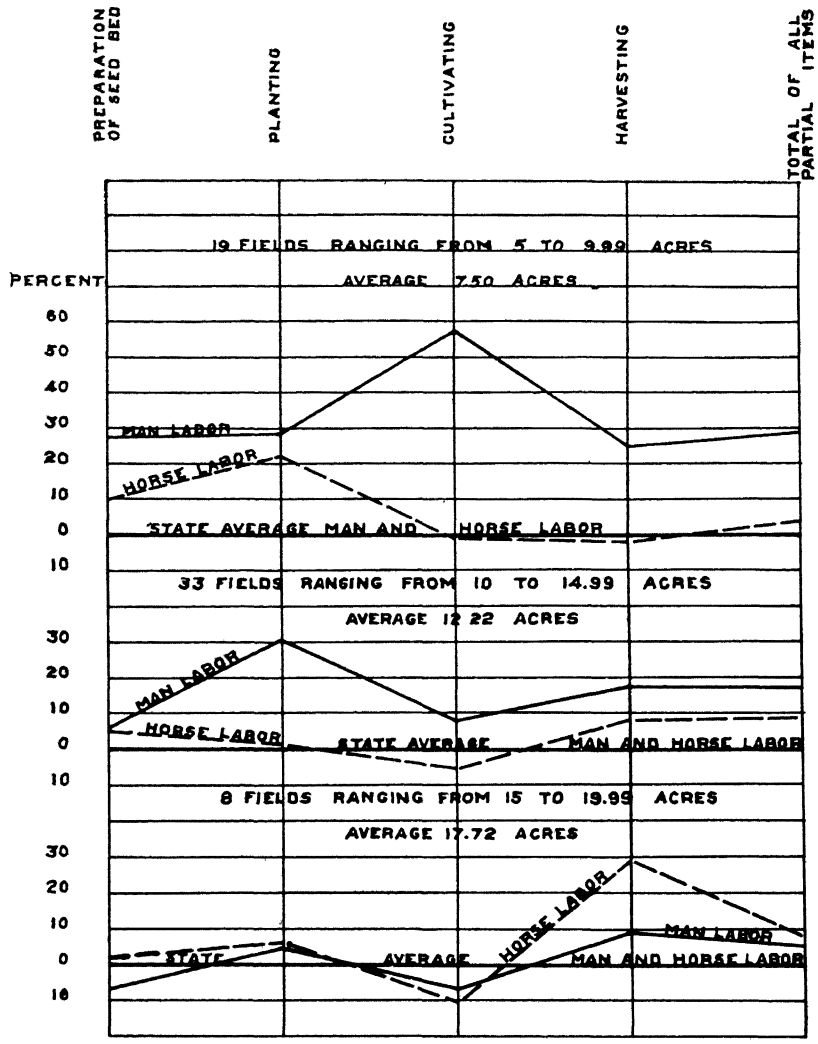

FIG 8 CURVES SHOWING RELATIVE AMOUNT OF LABOR EXPENDED PER ACRE IN GROWING CORN IN VARIOUS SIZED FIELDS AS COMPARED WITH THE STATE AVERAGE OF 108 FIELDS AVERAGING 12 97 ACRES

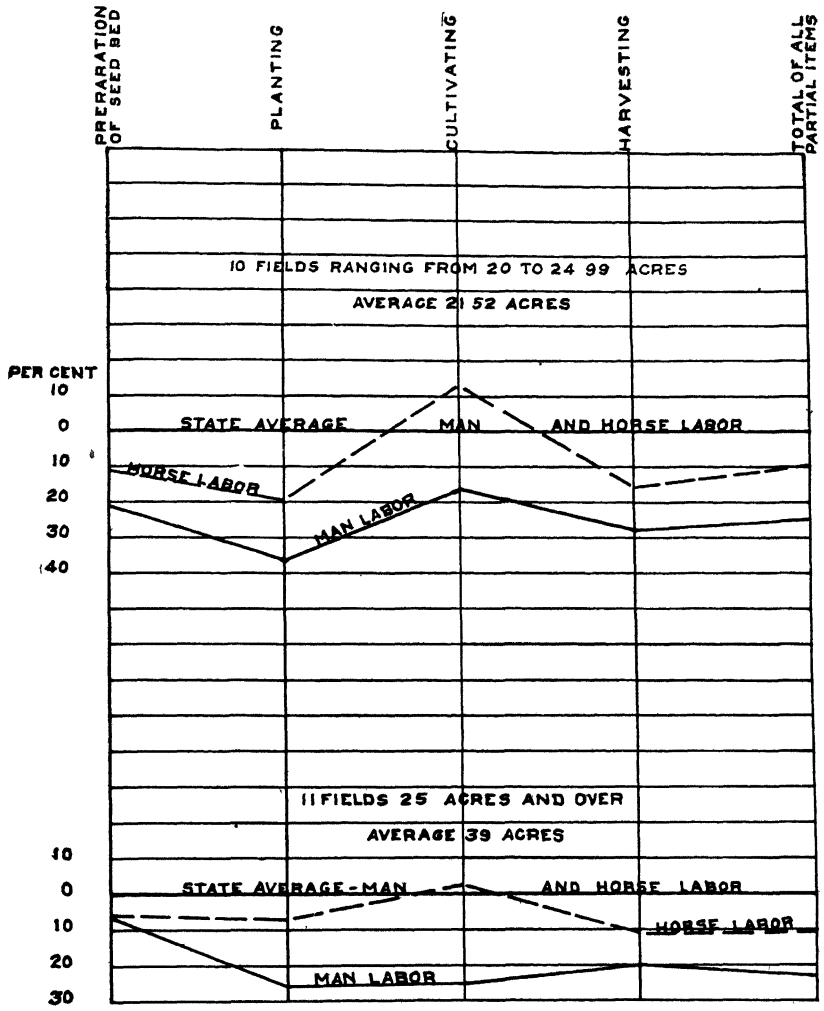

FIG. 9 CURVES SHOWING RELATIVE AMOUNT OF LABOR EXPENDED PER ACRE IN GROWING CORN IN VARIOUS SIZED FIELDS AS COMPARED WITH THE STATE AVERAGE OF 108 FIELDS AVERAGING 12 97 ACRES

TABLE XIII: Showing fields classified by size and location in the state.

Group division, acres	Total number of fields in group	Total area of all fields in group	Southeast		Northeast		Northwest		Southwest	
			Fields percent	Acres percent	Fields percent	Acres percent	Fields percent	Acres percent	Fields percent	Acres percent
.01-2.49	15	24.74	46.67	43.61	26.66	24.09	26.67	32.30	.....	.....
2.50-4.99	12	44.75	16.67	15.93	33.33	33.68	25.00	26.57	25.00	23.82
5.00-9.99	19	143.58	36.84	35.87	.....	.....	52.63	55.38	10.53	8.75
10.00-14.99	33	403.22	36.36	36 02	3.03	3.58	51.52	51.07	9.09	9.33
15.00-19.99	8	141.77	25.00	22.61	.. ..	.....	50.00	50.52	25.00	26.87
20.00-24.99	10	215.17	.....	.....	.....	.....	40.00	40.21	60.00	59.79

This table shows that, in any grouping of fields according to size, one region may predominate and hence the custom prevailing in the predominating region will greatly influence the total cost in that group. This is shown to a marked degree in the group .01 to 2.49 acres. In this group practically 47 percent of all the fields are in the Southeast section, and as shown in Table X, this section has the highest labor cost regardless of the size of the fields.

Further study of Figures 7, 8 and 9 or of Table XII reveals two pronounced cases in which the amount of man labor does not vary in accordance with the size of the fields. One is the time required for planting the fields averaging 3.73 acres, and the other is that required for cultivating the fields averaging 7.50 acres. Thesel exceptions are due, in a large measure at least, to the cultura methods. It so happens that in the first case all of the fields included were either drilled or planted with a check row planter. No time was spent in "marking out", and only one field had any replanting and that amounted to only one-half hour. In the second case, Table XIII shows that 37 percent of the fields are in the Southeast section, and 53 percent in the Northwest section. In both of these sections considerable hand labor (hoeing) was done. In fact, in all but 5 of the 19 fields included in the group averaging 7.50 acres, the hoe was used extensively as an implement of tillage; the average time of hoeing for all of the fields when used as explained in the footnote to Table XVIII on page 120 was 7.44 hours per acre, or 9.86 hours per acre for the fields in which hoeing was actually done. As these records cover a series of years and the fields are in various sections of the State, it is hardly probable that the climatic conditions were such as to require this amount of hoeing, or even a very large portion of it, in addition to the usual cultivation.

In Figure 7 the curve for the fields averaging 1.65 acres, shows that the man labor exceeds the horse labor in every partial item, varying from 50 to 126 percent. This of course indicates that a large amount of hand labor was done on these fields. However, where only a small acreage is grown annually the cost of hand labor may

be less than the interest on investment, taxes, insurance, depreciation and repairs on improved machinery, together with the cost of the horse labor necessary to operate the machinery.

The data at hand are not sufficient to justify the drawing of any conclusions when the fields are classified according to size in a given section, and compared with the average of all the fields in that section. However, charts, (not shown here) which have been prepared from such data, seem to indicate that the size of fields in any section bears approximately the same relation to the average of that section as the average of any size in the State bears to the average of all the fields in the State. (See Figures 7, 8 and 9.)

SHAPE OF FIELDS

Another factor, which is more or less important in the labor cost of producing corn, is the shape of the field. Obviously, the shape of the farm has much to do with the shape and arrangement of the fields. Here again topography must be considered, since the fences frequently follow the contours of the surface. Fields having four sides, no two of which are parallel, or many sided and irregular shaped fields, naturally have a great many "point rows." With heavy horses and implements or with three, four or five horse teams, considerable time is lost in making the extra turnings due to these point rows.

Of the 108 fields under consideration, we have been able to classify 53 percent as rectangular. Comparing the average of all the rectangular fields with the average of all the other fields, we find but little difference in the labor required. But, by reclassifying these according to area, it is found that, generally speaking, there is a difference in the amount of labor required in favor of the rectangular fields. In Figure 10 it is shown that in the group of 15 fields averaging 1.65 acres the total labor cost of the rectangular fields is less than of the misshapen ones, but this is not uniformly true of the various partial items in this group. This may be due to the fact that the work is largely hand labor, which should not vary a great deal with the shape of the field. The 12 fields averaging 3.73 acres (shown in Figure 7 but not shown in Figure 10) have only a few fields which are not rectangular, so no comparison can be made. Likewise, no comparison can be made in the group averaging 17.72 acres (shown in Figure 8 but not shown in Figure 11) because there is only one rectangular field in this group. In the groups averaging 7.50 acres (Figure 10), 12.22 acres and 21.52 acres (Figure 11) it will be observed that in every case the labor cost of the rectangular fields is considerably lower than that of the misshapen ones. Table XIV gives in tabular form the same data as are shown by Figures 10 and 11.

TABLE XIV. Showing relative amount of labor expended per acre in growing corn on rectangular and misshapen fields of various sizes, and the percentage variation from the State average for groups of the same size.

Field groupings and partial items	Man hours					Horse hours				
	Rectangular fields		Misshapen fields		State average	Rectangular fields		Misshapen fields		State average
	Hours per acre	Variation percent	Hours per acre	Variation percent		Hours per acre	Variation percent	Hours per acre	Variation percent	
Fields ranging from .01-2.49 A.	10 fields, av. 1.70 A.		5 fields, av. 1.54 A.		15 fields, av. 1.65 A.	10 fields, av. 1.70 A.		5 fields, 1.54 A.		15 fields, av. 1.65 A.
Preparation of seed bed	11.26	—13	16.48	28	12.89	23.52	—12	33.71	26	26.69
Planting	4.38	11	2.96	—25	3.94	3 39	3	3 05	—7	3.28
Cultivating	21.80	—3	23.82	6	22.43	12 60	—2	13 62	5	12.92
Harvesting	33.31	5	28.09	—11	31.69	12.84	—1	13.07	..	12.91
Total*	83.58	—1	87.47	3	84.79	66.22	—4	75.84	10	69.21
Fields ranging from 5.00-9.99 A.	10 fields, av. 7.36 A.		9 fields, av. 7.67 A.		19 fields, av. 7.50 A.	10 fields, av. 7.36 A.		9 fields, av. 7.67 A.		19 fields, av. 7.50 A.
Preparation of seed bed	8.86	—12	11.34	13	10.06	20.04	—11	25.28	12	22.58
Planting	1.98	—14	2.61	14	2.29	2.40	—3	2.55	3	2.47
Cultivating	13.16	—15	18.13	16	15.57	12.03	—8	13.99	7	13.03
Harvesting	27.22	4	25.09	—4	26.19	12.43	2	11.94	—2	12.19
Total*	57.45	—7	66.91	8	62.03	50.31	—13	65.08	13	57.72
Fields ranging from 10.00-14.99 A.	19 fields, av. 12.50 A.		14 fields, av. 11.33 A.		33 fields, av. 12.22 A.	19 fields, av. 12.50 A.		14 fields, av. 11.33 A.		33 fields, av. 12.22 A.
Preparation of seed bed	7.81	—1	9.24	1	8.40	19.81	—8	24 31	12	21.66
Planting	2.35	1	2.29	—2	2.33	1.98	—3	2.14	4	2.05
Cultivating	9.84	—8	11.91	11	10.69	12.21	—2	12.88	3	12.49
Harvesting	23.73	—4	25.94	5	24.64	13 59	1	13.18	2	13.43
Total*	53.55	—5	61.06	8	56.63	57.02	—6	65.57	8	60.53
Fields ranging from 20.00-24.99 A.	4 fields, av. 20.84 A.		6 fields, av. 21.96 A.		10 fields, av. 21.52 A.	4 fields, av. 20.84 A.		6 fields, av. 21.96 A.		10 fields, av. 21.52 A.
Preparation of seed bed	5.75	—8	6.54	5	6.23	18.64	2	18.06	—1	18.28
Planting	.97	—14	1.23	9	1.13	1.46	—10	1.73	6	1.63
Cultivating	7.17	—14	9.02	9	8.31	14.90	..	14.92	..	14.91
Harvesting	9.02	—40	19.00	25	15.14	6.06	—42	13.25	27	10.46
Total*	22.91	—37	42 48	17	36.20	41.04	—18	53.78	7	50.07

*See foot note to Table XI.

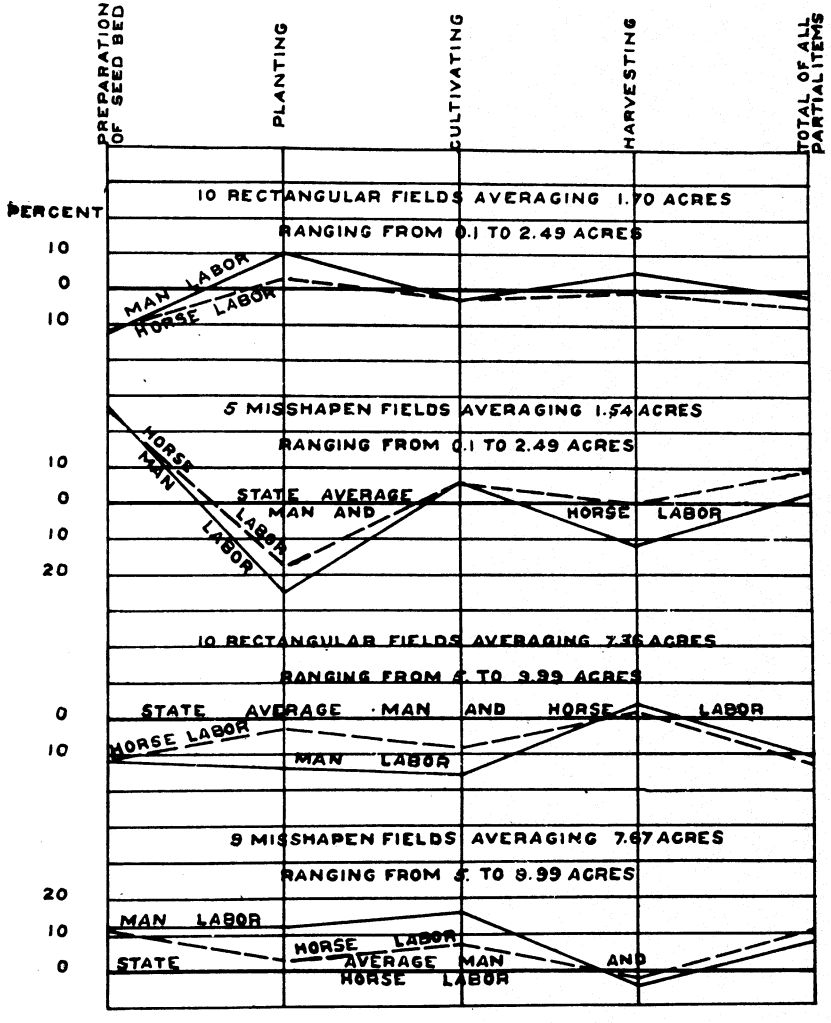

FIG. 10 CURVES SHOWING RELATIVE AMOUNT OF LABOR EXPENDED PER ACRE IN GROWING CORN ON RECTANGULAR AND MISSHAPEN FIELDS AS COMPARED WITH THE STATE AVERAGE OF FIELDS OF SIMILAR SIZE

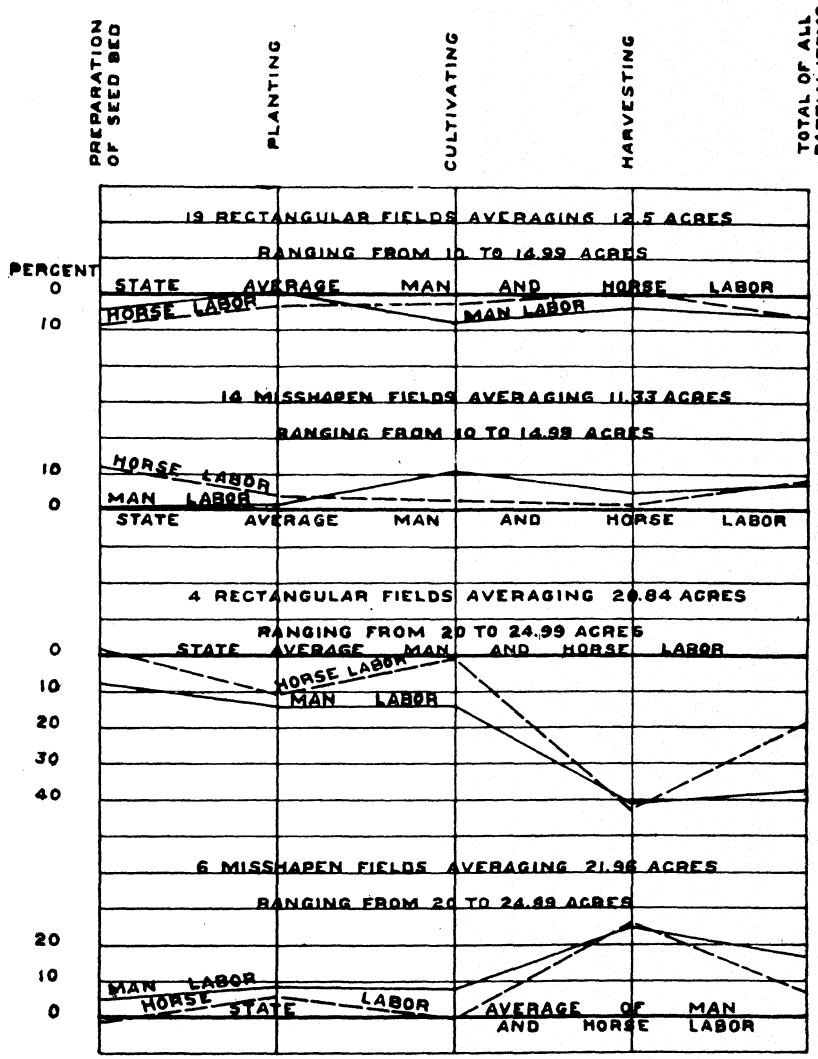

FIG. 11 CURVES SHOWING RELATIVE AMOUNT OF LABOR EXPENDED PER ACRE IN GROWING CORN ON RECTANGULAR AND MISSHAPEN FIELDS AS COMPARED WITH THE STATE AVERAGE OF FIELDS OF SIMILAR SIZE

In comparing the ratio of the width to the length of rectangular fields it is found that where the length is three times the width the total labor cost is less than where it is twice the width; where the length is twice the width the labor cost is less than where the sides are more nearly of equal length. This, however, is not uniformly true for each partial item.

TABLE XV: Showing that the method by which the crop is harvested has no appreciable effect on the labor cost of the partial items.

		Average of all fields shown in Table III	Average of all fields harvested by same general method as those of Table III	Average of all fields harvested in any manner whatsoever
Applying fertilizer:	Number of fields	82	97	153
	Average size of field: acres	12.79	12.40	12.50
	Hours per acre—man	3.48	5.27	4.83
	Hours per acre—horse	8.43	8.29	7.52
Care of seed:	Number of fields	82	89	144
	Average size of field: acres	14.29	13.84	13.50
	Hours per acre—man	.82	.79	.81
	Hours per acre—horse	.08	.08	.08
Preparation of seed bed:	Number of fields	108	122	202
	Average size of field: acres	12.97	12.53	12.65
	Hours per acre—man	7.92	8.07	8.58
	Hours per acre—horse	20.58	20.62	21.69
Planting:	Number of fields	108	125	204
	Average size of field: acres	12.97	12.68	12.77
	Hours per acre—man	1.78	1.79	1.83
	Hours per acre—horse	2.02	2.07	2.12
Cultivating:	Number of fields	108	125	204
	Average size of field: acres	12.97	12.68	12.75
	Hours per acre—man	9.89	9.95	9.81
	Hours per acre—horse	13.16	12.87	12.86
Harvesting:	Number of fields	108	121	180
	Average size of field: acres	12.97	12.84	13.30
	Hours per acre—man	20.98	20.89	20.69
	Hours per acre—horse	12.40	12.39	13.10
Miscellaneous labor:	Number of fields	27	38	68
	Average size of field: acres	10.53	10.30	10.89
	Hours per acre—man	.34	.53	.58
	Hours per acre—horse	.12	.24	.26
General farm labor:	Number of fields	108	125	205
	Average size of field: acres	12.97	12.68	12.74
	Hours per acre—man	2.82	2.88	2.68
	Hours per acre—horse	.90	.88	.86

In making a study of partial items the question also arises whether or not the manner in which the crop is to be harvested has any effect upon the time required to prepare the seed bed, plant or cultivate the crop. For example, if a field is to be hogged off will the farmer spend less time in cultivating that field than he would a field which he is expecting to put in the silo or cut and husk in some manner? Table XV, showing the actual average time per acre, compares item by item the average of the fields shown in Table III (1) with all fields harvested in the same general method, regardless of any variation in the number of fields

in each partial item, and (2) with all fields, regardless of the method in which they were handled or harvested. This table shows that the method of harvesting has no appreciable effect on the other partial items, such as preparing the seed bed, planting, cultivating, etc. This being the case, the larger number of fields will be used in discussing both the partial item labor costs and also the cost per acre, once over, of the various operations. The variation in the number of fields and in the average size of fields is due to the fact that in any particular partial item, only those fields actually operated upon are considered. The acreage is not the same in all the partial items for various reasons. Climatic conditions during the summer and fall may, for example, decrease the harvested area as compared with that which was prepared or planted. Or again, not all farmers manure or fertilize their corn ground; nor do all test or grade their seed corn. These and similar reasons account for the variations just mentioned.

Fig. 12. Efficient use of labor.

In studying these various partial items, a number of interesting features and comparisons are found. Harvesting is the largest single item. The man labor in harvesting amounts to more than 40 percent of the total man labor required to produce the crop, while the combined man and horse labor cost in this item is approximately 34 percent of the total labor cost. If the average hours of labor shown in Table IV (23.38 man and 41.21 horse) be subtracted from the average of Table III (48.18 man and 55.44 horse), the difference, 24.80 man hours and 14.23 horse hours, represents the time

required for harvesting, a large part of which is saved when the corn is hogged off. These figures for harvesting are much the same as given in Table XV. If both are reduced to a money basis, it is found that the cost of harvesting, as determined by subtraction, exceeds that as shown in Table XV by only 75 cents per acre. (If the hours shown in Table IV be subtracted from the averages mentioned on page 97 (46.12 man and 55.37 horse) the time remaining for harvesting is 22.74 man hours and 14.16 horse hours or 41 cents per acre, more than the average shown in Table XV.)

Fig. 13. A method of harrowing for corn still practiced in some sections of Ohio.

The average yield of 87 of the 108 fields under consideration was 48.13 bushels per acre. Forty-four of these fields produced less than this, or an average of 36.57 bushels per acre, while 43 fields produced an average of 59.38 bushels per acre. Table XVI shows the labor cost of harvesting, as well as the total labor cost of these fields when classified according to yields per acre. From this table it will be seen that the total labor cost of the 43 fields having the average yield of 59.38 bushels per acre is but 50 cents per acre more than that of the 44 fields averaging only 36.57 bushels per acre, thus making the labor cost per bushel very much lower for the 43 fields having the higher yield. Likewise, it will be seen that the labor cost does not increase correspondingly as the yield per acre increases, and the labor cost per bushel of course constantly decreases, until the yield of 74.85 bushels per acre is reached. It is probable that the high labor cost per bushel in the last class is not typical because of the smaller number of fields in the class and is caused largely by the smaller acreage of the fields and the much greater amount of hand labor on some of them.

TABLE XVI: Showing labor required for harvesting and total labor required for producing corn on fields classified according to yield.

Classification	Number of fields	Average size of fields	Labor cost per acre of harvesting			Total labor cost per acre			Average yield per acre	Total labor cost per bu.
			Man hours	Horse hours	Cost at 16c and 8c	Man hours	Horse hours	Cost at 16c and 8c		
Fields producing less than 48 bu. per acre.....	44	11 75	20.66	12.06	$4.27	49.42	55.14	$ 12.32	36 57	33.7c
Fields producing more than 48 bu. per acre.....	43	12 15	22.63	13.83	4.73	50.37	58.28	12.72	59.38	21.4c
Fields producing less than 30 bu. per acre	8	8 89	26.10	15.00	5.38	52.81	56.02	12.93	21.08	61.3c
Fields producing 30 and less than 40 bu. per acre.	16	13 77	17.62	9.77	3.60	41 37	50.78	10.68	33.96	31.4c
Fields producing 40 and less than 50 bu. per acre..	24	11.44	21 38	13.43	4.50	53 81	57.90	13.24	45.29	29.2c
Fields producing 50 and less than 60 bu. per acre .	17	14 35	22.82	11 52	4.57	47.90	51.13	11.75	55.29	21.3c
Fields producing 60 and less than 70 bu. per acre.	17	11.89	20.77	16.33	4.63	49.48	64 91	13.11	64.70	20.3c
Fields producing 70 bushels and over	5	5.46	41.44	1.60	6.76	92.76	83.79	21.54	74.85	28.8c

After harvesting, cultivation is the next largest item in reference to man labor, but preparation of the seed bed exceeds it in both the hours of horse labor and the total labor cost. The following table shows the ranking of the various partial items in hours of labor and also the approximate percentage each is of the total labor cost.

TABLE XVII: Showing labor relation of different partial items to each other.

Partial item	Approximate percent of total labor cost	Relative rank of amount of labor used		Hours of horse labor used per hour of man labor
		Man	Horse	
Harvesting	34	1	2	.63
Preparing seed bed	24	3	1	2.53
Cultivating	21	2	3	1.31
Fertilizing	11	4	4	1.56
Overhead labor ("General Farm")	4	5	6	.32
Planting	4	6	5	1.16
Care of seed	1	7	8	.01
Miscellaneous labor	1	8	7	.45

The preceding table, together with Table XV, reveals the fact that the overhead labor charge, or general farm labor, is considerably more than is generally supposed. In fact, it is usually disregarded entirely by farmers, whereas these figures show the overhead man labor per acre to be about 46 percent more than that required for planting; approximately one-third the time required to prepare the seed bed, and more than one-third the time of cultivating, yet all of these are well known operations in the production of corn, the importance of the cost of which no one will dispute.

By referring to Tables III, IV, V and VI on pages 95 and 96, it will be seen that with the exception of "hogged off" corn—Table IV—the total man hours nearly equal the total horse hours, and even where the harvesting is omitted there are less than two horse hours used per hour of man labor. This indicates that a great deal of hand labor is being done and that in some operations at least the horse labor is not being used to the best advantage. Table XVII shows that only a few of the partial items have much more than one horse hour per hour of man labor.

In Table XV were shown the partial item costs for all fields on which any work in connection with any particular partial item was performed, regardless of the times over or the acres covered. Table XVIII shows the labor cost per acre once over, of the more important operations.

TABLE XVIII: Labor required per acre, once over.

Operation	Total acres	Total hours		Hours per acre	
		Man	Horse	Man	Horse
Manure	662.73	7,816.72	11,697.14	11.79	17.65
Manure[1]	1,956.32	11,574.97	17'869.89	5 92	9.13
Care of seed	1 943.62	1 578.00	161.07	.81	.08
Preparation of seed bed:					
Plowing	2,654.70	14,428.38	34,929.85	5.44	13.16
Harrowing (spike)	3,210.41	3,170.48	8,617.71	.99	2.68
Discing	1,908.55	1,946.10	5,648.30	1.02	2.96
Planking	1,071.38	1,000.75	2'691.50	.93	2.51
Rolling[2]	842.64	641.00	1 353.25	.76	1.61
Planting:					
Marking out—1 horse	74.76	117.75	117.75	1.58	1.58
" " 2 horses	164.05	124.75	249.50	.76	1.52
Planting by hand	43.06	102.50	.....	2.38	....
Drilling	224.10	335.50	407.00	1.50	1.82
Planting (2 horses)	1,592.79	1,488.00	2,975.00	.93	1.86
Replanting	638.73	1,183.25	.....	1.85	....
Replanting[1]	1 158.67	1 354.75	.....	1.17	....
Cultivating:					
Harrowing after planting	493.40	348.00	808.00	.71	1.64
Rolling after planting	368.01	259.00	515.00	.70	1.40
Using weeder	292.00	214.73	214.73	.74	.74
Cultivating (2 horses)	2,788.19	4,675.00	9,350.00	1.68	3.36
Hoeing	459.16	5,615.75	.....	12.23	....
Hoeing[1]	1 649.67	7 792.50	.....	4.72	....
Harvesting:					
Cutting by hand	576.66	5,226.50	.....	9.06	....
Cutting by machine	565.62	1,428.37	2 181.62	2.53	3.86
Cutting silage corn by machine	95.79	247.63	479.13	2.59	5.00
Shocking	414.52	1,463.00	.....	3.53	....
Picking up ear corn after binder	267.44	429.50	596.00	1.61	2.23
Filling silo[3]	144.50	3,356.63	2,818.38	23.23	19.50
Husking by hand	555.49	8,004.50	.....	14.41	....
Hauling corn[4]	715.51	2'788.00	4,618.25	3.90	6.45
Hauling fodder[4]	348.80	853.75	1,165.00	2.45	3.34
Snapping, jerking and husking from stalk	156.93	1,690.75	2,165.25	10.77	13.80
Husking and shredding	353.30	4'497.75	4'245.75	12.73	12.02
Shredding	121.41	600.50	525.50	4.95	4.33
Hauling shock corn	31.48	225.00	285.00	7.15	9.05
Hauling fodder for feed[5]	140.02	842.00	1 234.00	6.01	8.81

[1]This includes the fields in the preceding item and in addition those in which only a part of the area was covered. The total area of fields, even though partly untreated, has been used in the calculations in connection with this item.

[2]The man hours include some labor done by boys which has been reduced to the equivalent of man time.

[3]Includes the time for cutting the corn in the field.

[4]After corn has been husked from shock in field.

[5]Only one farm. The time shown doubtless includes time required to feed fodder to cattle.

In studying the preceding table in connection with Table XV, it is found that the man labor of plowing is 63 percent and the horse labor 61 percent, respectively, of the labor of preparing the seed bed. In planting it is seen that the man labor per acre of replanting is more than is required to make the first planting by machine. Replanting was done on 86 out of 168 fields, hence it is an item of considerable importance as judged by the farms under consideration. If this time of replanting had been spent in testing and repairing the planter, testing seed corn, etc., during the period when crop work was at a standstill, a great deal of valuable time could doubtless have been put on other crops during the growing season, to say nothing about the more uniform stand of corn.

A few points in connection with the cultivation of corn as pronounced by Table XVIII deserve special mention. Out of a total of 204 fields there were 133 fields, with a total of 1,649.67 acres, on which the hoeing amounted to 4.72 hours per acre for the entire area, as explained in the foot note. This includes a total of 384.25 man hours for uncovering, setting up and thinning. Of these 133 fields there were 55, with a total of 459.16 acres, on which the average time of hoeing the entire area was 12.23 man hours. On dividing the total time for hoeing (7,792.5 man hours) by the total acreage (2,600.98) of the 204 fields cultivated, it is found that the hoeing amounts to 3 man hours per acre, which is practically 31 percent of the total man labor (9.81 hours) or 18 percent of the total labor cost of cultivation. From these figures it is manifest that a vast amount of hand labor, especially in cultivating, is being done. The experience of some of those men who have cooperated in this work proves that if only a part of this time be spent in more thorough preparation of the seed bed and in the cultivation, other than hoeing, of the crop, the profits will be equally as great and the task not so disagreeable.

As previously stated, it is the purpose of this Bulletin to discuss some of the phases of the labor cost of producing corn. However, in order that an approximate total cost may be determined, the following table based upon our records is added.

TABLE XIX: Costs other than labor—per acre.

Item	Number of fields reported	Minimum	Maximum	Average of all
Value of fertilizer applied	73	$ .62	$ 4.01	$ 1.46
Value of seed used	173	.05	2.32	.28
Value of twine used	70	.08	.38	.18
Machinery cost	176	.30	4.12	1.34
Land rental	170	1.27	6.88	3.81
General farm cash expense	128	.03	1.99	.42
Husking and shredding charge	18	1.00	2.91	1.97
Shredding charge	13	.46	.86	.61
Filling silo	5	1.24	1.61	1.36
Fuel	36	.03	.57	.25

The foregoing are the figures as they have been worked out for the various farms, but since no definite study of them has been made, they are not presented with the idea that they are surely correct. They are given more as a basis on which to make estimates. However, upon comparison it is found that they are not materially different from the figures presented in Bulletin No. 73, of the Bureau of Statistics, U. S. Department of Agriculture.

In the preceding table the item of land rental is based on the inventoried value of the farms under consideration. The average figure is doubtless somewhat low, owing to the fact that a part of

the farms on which this work was done are in sections of the State where land in general is cheaper, and the inventories are of the entire farm rather than of the more valuable fields on which the corn was grown. In the typical corn belt region of Ohio, farms rent at from five to seven dollars per acre for the entire acreage.

Fig. 14. Methods of cultivating corn as practised in Ohio (A) Not common, but seen occasionally. (B) Inefficient use of man labor (C) A quite common method, although the two-row worker is being rapidly introduced.

The preceding table has not taken into consideration the item of interest on the "cost until the crop yields a return," or the item of "insurance" against plant diseases, insects, floods, hailstorms and other weather conditions. This last item, like the first, is not actually paid for in cash, yet a certain percentage of the yield should be

deducted for insurance before figuring any profits. The value of the yield deducted should be allowed to accumulate as a fund to be drawn from when the crop fails or is damaged by some factor over which the producer has no control. The percentage of the yield to be deducted for insurance will depend upon the yield that is expected annually. The higher this gets above the average production of the State the greater should be the percentage set aside for insurance. The large yields per acre, which farmers have in mind when figuring costs, rarely ever materialize on the entire acreage planted. One hundred bushel yields by weight of merchantable corn are rare indeed; 75 bushel yields are not at all frequent.

While some of these items of cost seem of minor importance, yet all are items which must be considered before any profits can be figured. The failure to consider them misleads many people in figuring the cost of production upon their farms. The average field of corn in Ohio probably costs more than it is worth, unless the producer figures his labor at a very low rate.

SUMMARY

The labor cost is the largest single item in the total cost of producing corn.

From the fields under consideration it is found that the total labor required is 48.18 man hours and 55.44 horse hours; or, at 16 cents per hour for man and 8 cents per hour for horse labor, the cost is $12.14 per acre.

The cost in the different sections of the State, figured at 16c for man and 8c for horse labor is: For the Southwest section, $9.62; for the Northwest section, $12.46; for the Northeast section, $16.28; for the Southeast section, $16.76.

Replies from 34 Ohio municipalities having an average population of 5,831 show the average wage per hour for common laborers to be approximately 19c; for the common laborer with team, 44c. When figured at these rates the labor cost per acre of producing corn for the State is $16.08; for the Southwest section, $12.87; for the Northwest section, $16.46; for the Northeast section, $21.33, and for the Southeast section, $22.01.

In many cases the crop yield is not sufficient to pay for the single item of labor required to produce it unless the labor is figured at an extremely low rate.

Within certain limits, at least, the labor cost per acre is less on large fields than on small ones.

The man labor per acre of replanting, which is still a common custom, is more than is required to make the first planting by machine.

A large amount of hand labor, especially in cultivating, is done on the corn crop. It would seem that much of this could well be avoided.

The labor cost of harvesting is more than one-third the total labor cost. An appreciable amount of labor is therefore saved when the crop is harvested by livestock in the field.